 <p>County of Kaua'i Department of Public Works Building Division</p>	<p>POLICY AND STANDARD OPERATING PROCEDURE</p> <hr/> <p>BUILDING PERMIT FLOOD REVIEW POLICY</p>	<p>Documentation Number: BU</p>
		<p>Revision</p>

1. POLICY STATEMENT:

The Building Division, Department of Public Works shall have standard procedures for enforcement of the Flood Plain Management Ordinance, Chapter 15, Article 1, Kaua'i County Code 1987, as amended.

The County Engineer shall have the power and it shall be his duty to regulate the County's participation in the National Flood Insurance Program pursuant to the National Insurance Act of 1968, which enable property owners in flood-prone areas to obtain flood insurance and assure future federal financial assistance for the County. It has been determined that the Code Enforcement Section, Building Division, Department of Public Works is the responsible agency that will administer the Flood Plain Management Ordinance.

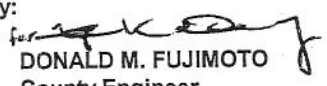
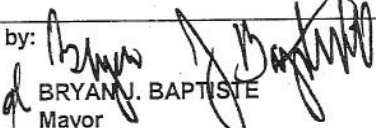
The term "authorized representative" shall construe to mean Chief of the Building Division and his supervisors designated as subordinate officers to the County Engineer in enforcing the Flood Plain Management Ordinance.

2. PURPOSE:

The purpose of this policy is to develop a procedure on the review of building permit application for buildings and structures whose property fall within flood-prone areas of the County of Kaua'i.

3. APPLICABILITY:

This policy applies to the Code Enforcement Section, Building Division, Department of Public Works, County of Kaua'i, 4444 Rice Street, Suite 175, Lihu'e, HI 96766.

Prepared by: Don Lutao Jr.	Original release date: April 1, 2007	Date last revised:
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4. DEFINITIONS

"Area of Special Flood Hazard" is the land in the floodplain within a community subject to a one percent (1.0%) or greater chance of flooding in any given year or determined by the County Engineer in areas adjacent to drainage facilities not identified in the FIRM. The areas may be designated in the FIRM as Zones A, AH, AE, or VE. For purposes of these regulations, the term "special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard."

"Base Flood" means the flood having a one percent (1.0%) chance of being equaled or exceeded in any given year, otherwise commonly referred to as the 100-year flood.

"Base Flood Elevation" means the water surface elevation of the base flood.

"Breakaway Walls" means any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any other suitable building material which are not part of the structural support of the building and which are so designed as to breakaway, under abnormally high tides or wave action, without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system.

"Community Developed Flood Information" means flood information obtained by the County of Kaua'i from sources other than FEMA. Examples are drainage and flood studies by professional civil engineers licensed in the State of Hawai'i, drainage and flood setbacks in approved subdivision maps, etc.

"Coastal High Hazard Area" means the area subject to high velocity waters, including but not limited to coastal and tidal inundation or tsunamis. The area is designated on a FIRM as Zone VE.

"County" means the County of Kaua'i.

"County Engineer" means the County Engineer of the County of Kaua'i or his authorized representative.

"Development" means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.

"Federal Emergency Management Agency (FEMA)" the agency of the US Government tasked with disaster mitigation, preparedness, response and recovery planning

"Flood or Flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal water resulting from any source, such as tsunamis, or the unusual and rapid accumulation of runoff or surface waters from any source.

"Flood Fringe Area" means the portion of the flood plain outside the floodway, designated as [AE, AO,] AE and AH Zones on the FIRM.

"Flood Insurance Rate Map (FIRM)" means the official map on which the National Flood Insurance Program has delineated the areas of special flood hazards, risk premium zones applicable, base flood elevations, and the floodway.

"Flood Insurance Study" means the official report provided by the National Flood Insurance Program that includes flood profiles, the FIRM, and the water surface elevation of the base flood.

"Flood Study" a determination of the 100-year flood limits and base flood elevation by a licensed professional civil engineer registered in the State of Hawai'i that has been approved by the County Engineer or his authorized representative.

"Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

"General Flood Plain Area" means the area consisting of the approximate flood plain area as delineated on the flood maps, identified as A, D and X Zones on the FIRM, where detailed engineering studies have not been conducted by the National Flood Insurance Program to delineate the flood elevation and floodway.

"Historic Structure" means any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of the Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
3. Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - a) By an approved state program as approved by the Secretary of the Interior or
 - b) Directly by the Secretary of the Interior in states without approved programs.

"Letter of Map Amendment (LOMA)" A LOMA is the result of an administrative procedure in which the Federal Insurance Administrator reviews scientific or technical data submitted by the owner or lessee of a property who believes the property has incorrectly been included in a designated Special Flood Hazard Area. (SFHA). A LOMA amends the currently effective FEMA map and establishes that a property is not in a Special Flood Hazard Area (SFHA).

"Letter of Map Revision (LOMR)" A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations, and planimetric features. All requests for LOMRs must be made to FEMA through the chief executive of the community, since it is the community that must adopt any changes and revisions to the map. A LOMR is usually followed by a physical map revision.

"Lowest Floor" means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of this Ordinance.

"Mean Sea Level (MSL)" for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

"National Flood Insurance Program (NFIP)" A program managed by the Mitigation Division of the Federal Emergency Management Agency (FEMA). The NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners in the communities that participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. Also, the NFIP identifies and maps the Nation's floodplains.

"New Construction" for floodplain management purposes means structures for which the start of construction commenced on or after the effective date of November 4, 1981 and includes any subsequent improvements to such structures.

"Repetitive Loss Structure" means a home or business structure damaged by floods two times in the past ten years, where the cost of fully repairing the flood damage to the building, on the average,

equaled or exceeded 25% of its market value at the time of each flood.

"Special Flood Hazard Area" means the same as "Area of Special Flood Hazard."

"Start of Construction" (for other than new construction or substantial improvements under the Coastal Barrier Resources Act (Pub. L. 97-348)) includes substantial improvement, and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition placement, or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as pouring of a slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

"Structure" means a walled and roofed building and includes gas or liquid storage tanks that is principally above ground and include manufactured homes such as mobile homes.

"Substantial Improvement" means any cumulative series of repairs, reconstruction, improvements, or additions to a structure over a ten year period, where the cumulative cost equals or exceeds fifty percent (50%) of the market value of the structure before the start of construction of the first improvement during that ten year period. For the purposes of this definition, substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The value of any substantial improvement shall be determined by the County Engineer or his authorized representative. The term does not, however, include either: (a) any project for improvement of a structure to correct existing violations of a state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or (b) any alteration of a "historic structure," provided that the alteration will not precluded the structure's continued designation as a "historic structure."

"Tsunami" means a great sea wave produced by submarine earth movement or volcanic eruption.

"Violation" means the failure of a structure or other development to be fully compliant with the community's flood plain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this Flood Plain Management Ordinance is presumed to be in violation until such time as that documentation is provided.

5. PROCEDURES

DETERMINING THE FLOOD ZONE OF A STRUCTURE

The structure's location shall be checked on the Flood Insurance Rate Map (FIRM) to determine if it is in a special flood hazard area. If the structure is adjacent to a river, stream, storm water channel, outfall area, or other inland water or drainage facility, determine if the area is subject to special flood hazards by also checking the Subdivision Map, Topographic Map, or other community developed flood information such as flood studies. A flood study may be required if no community developed flood information is available to determine flood limits and elevations.

If the structure is located in two or more flood zones, the most conservative zone will prevail. i.e., if part of the building is in AE 12' Mean Sea Level (MSL) and the other is in AE 13' MSL, the

building will be determined to be in flood zone AE 13' MSL.

If the flood zone in the FIRM conflicts with a community developed flood zone such as in a subdivision map or flood study, the more conservative flood zoning will prevail until such time as a Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) is approved by the Federal Emergency Management Agency (FEMA).

NONCONFORMING STRUCTURES

If a structure is in a special flood hazard area but was built before November 4, 1981, it is Pre-FIRM or "grandfathered". A structure is also "grandfathered" if it was built to the standard of a prior Flood Insurance Rate Map and a subsequent change in the FIRM renders it non-conforming. Building permits for "grandfathered" nonconforming structures can be approved if the improvement is unsubstantial.

When calculating for substantial improvement, the value of the improvement is as determined by the County's Building Division according to their valuation policy. The market value of the structure is as assessed by the County's Real Property Assessment Division. At the request of the property owner or building permit applicant, an appraisal of the structure by a licensed appraiser may be used in lieu of the Real Property assessment provided the value of the structure is depreciated to the value at time of the first improvement during the ten year period.

FLOOD FRINGE (A, AH, AE) CONSTRUCTION & DEVELOPMENT STANDARDS

A. RESIDENTIAL

All new construction and substantial improvement of a residential structure shall have its lowest floor elevated to or above the base flood elevation and so noted on the building plans.

Building plans will need to be designed and stamped by either a licensed structural engineer or architect registered in the State of Hawai'i. A Flood Hazard Certification will need to be filled out and signed by the structural engineer or architect.

Spaces below the lowest floor may be enclosed solely for parking of vehicles, building access, or storage. Fully enclosed areas below the lowest floor shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. A minimum of two openings (on different walls) having a total net area of not less than one square inch for every square foot of enclosed area shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings or devices provided they permit the automatic entry and exit of flood waters.

No machinery or equipment which services a building such as furnaces, air conditioners, heat pumps, hot water heaters, washers, dryers, food freezers, elevator lift equipment, and electrical junction boxes are permitted below the base flood elevation. However; in the event permissible machinery or equipment are below the flood elevation, protection of these items shall comply with the requirements of Chapter 13, Electrical Code and Chapter 14 Plumbing Code, KCC 1987 as amended for works in flood hazard districts.

Water and sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the system into the flood waters. The on-site waste disposal system shall be located to avoid impairment to the system from flood waters or contamination of flood waters during flooding.

Prior to issuance of the Certificate of Occupancy, an Elevation Certificate will need to be completed by a licensed professional civil engineer or surveyor registered in the State of Hawai'i. The County Engineer or his duly authorized representative shall review the Certificate of Elevation and determine the lowest floor. If the lowest floor is below the base flood elevation, the contractor

and building permit applicant shall be informed that the structure is in violation of the applicable requirements of the Flood Ordinance. If the lowest floor is at or above the base flood elevation, the County Engineer or his duly authorized representative shall fill out and sign the Community Information Section (Section G) of the Elevation Certificate. The original copy is to be kept on file, a copy shall be provided to the building inspector, and a copy shall be sent to the building permit applicant or the building owner.

B. NON-RESIDENTIAL

All items required for residential construction and development also apply to non-residential construction and development except that in lieu of having its lowest floor elevated to or above base flood elevation, non-residential structures may be flood-proofed one-foot above base flood elevation. See FEMA Technical Bulletin 3-93 for requirements and the required certification form and procedure.

FLOODWAY (AE) CONSTRUCTION & DEVELOPMENT STANDARDS

All new construction, repetitive loss structures, and substantial improvements shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is elevated one foot above the base flood elevation and so noted on the building plans.

A licensed professional civil engineer registered in the State of Hawai'i will need to submit a No-Rise certification and calculations, as well as mitigating measures to compensate for the loss in conveyance due to the floodway encroachment for staff's review and approval.

Building plans will need to be designed and stamped by either a licensed structural engineer or architect registered in the State of Hawai'i. A Floodway Flood Hazard Certification will need to be filled out and signed by the structural engineer or architect.

A Floodway Waiver and Indemnity Agreement will need to be completed by the owners, approved by the County Engineer, and recorded with the Bureau of Conveyances.

No machinery or equipment which services a building such as furnaces, air conditioners, heat pumps, hot water heaters, washers, dryers, food freezers, elevator lift equipment, and electrical junction boxes are permitted below the base flood elevation. However, in the event permissible machinery or equipment are below the flood elevation, protection of these items shall comply with the requirements of Chapter 13, Electrical Code and Chapter 14 Plumbing Code, KCC 1987 as amended for works in flood hazard districts.

Water and sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the system into the flood waters. The on-site waste disposal system shall be located to avoid impairment to the system from flood waters or contamination of flood waters during flooding.

Prior to issuance of the Certificate of Occupancy, an Elevation Certificate will need to be completed by a licensed professional civil engineer or surveyor registered in the State of Hawai'i. The County Engineer or his duly authorized representative shall review the Certificate of Elevation and determine the lowest floor. If the bottom of the lowest horizontal structural member of the lowest floor is less than one foot above the base flood elevation, the contractor and building permit applicant shall be informed that the structure is in violation of the applicable requirements of the Flood Ordinance. If the bottom of the lowest horizontal structural member of the lowest floor is one foot or more above the base flood elevation, the County Engineer or his duly authorized representative shall fill out and sign the Community Information Section (Section G) of the Elevation Certificate. The original copy is to be kept on file, a copy shall be provided to the building inspector, and a copy shall be sent to the building permit applicant or the building owner.

COASTAL HIGH HAZARD (VE) CONSTRUCTION & DEVELOPMENT STANDARDS

All new construction, repetitive loss structures, and substantial improvements shall be securely anchored on pilings or columns. Pilings or columns used as structural support shall be designed and anchored so as to prevent flotation, collapse, and lateral movement due to the effect of wind and water loads acting simultaneously on all building components.

Fill is prohibited for structural support. Manmade alteration of sand dunes and mangrove stands are prohibited. All new construction shall be located landward of the reach of mean high tide.

All new construction, repetitive loss structures, and substantial improvements shall be elevated so that the bottom of the lowest horizontal structural member of the lowest floor is elevated at or above the base flood elevation and so noted on the building plans.

Building plans will need to be designed and stamped by either a licensed structural engineer or architect registered in the State of Hawai'i. A Coastal High Hazard Certification will need to be filled out and signed by the structural engineer or architect.

Spaces below the lowest horizontal structural member may be enclosed solely for parking, building access, or storage. Enclosures shall be designed as breakaway. Breakaway means any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any suitable building material which are not part of the structural support of the building and which are designed as to breakaway under abnormally high tide or wave action, without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. A breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot.

No machinery or equipment which services a building such as furnaces, air conditioners, heat pumps, hot water heaters, washers, dryers, food freezers, elevator lift equipment, and electrical junction boxes are permitted below the base flood elevation. However; in the event permissible machinery or equipment are below the flood elevation, protection of these items shall comply with the requirements of Chapter 13, Electrical Code and Chapter 14 Plumbing Code, KCC 1987 as amended for works in flood hazard districts.

Water and sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharge from the system into the flood waters. The on-site waste disposal system shall be located to avoid impairment to the system from flood waters or contamination of flood waters during flooding.

Prior to issuance of the Certificate of Occupancy, an Elevation Certificate will need to be completed by a licensed professional civil engineer or surveyor registered in the State of Hawai'i. The County Engineer or his duly authorized representative shall review the Certificate of Elevation and determine the lowest floor. If the bottom of the lowest horizontal structural member of the lowest floor is below the base flood elevation, the contractor and building permit applicant shall be informed that the structure is in violation of the applicable requirements of the Flood Ordinance. If the bottom of the lowest horizontal structural member of the lowest floor is at or above the base flood elevation, the County Engineer or his duly authorized representative shall fill out and sign the Community Information Section (Section G) of the Elevation Certificate. The original copy is to be kept on file, a copy shall be provided to the building inspector, and a copy shall be sent to the building permit applicant or the building owner.

6. TECHNICAL BULLETINS

FEMA Technical Bulletins provide useful guidance in the review of buildings in Special Flood Hazard Areas. Below are some that we have used in our flood review:

1-93 Openings in Foundation Walls. Provides guidance on the NFIP regulations

concerning the requirement for openings in below-Base Flood Elevation foundation walls for buildings located in Zones A, AE, A1-A30, AR, AO, and AH.

2-93 Flood-Resistant Materials Requirements. Provides guidance on the NFIP regulations concerning the required use of flood-damage resistant construction materials for building components located below the Base Flood Elevation in Special Flood Hazard Areas (both A and V zones).

3-93 Non-Residential Floodproofing -- Requirements and Certification.

Provides guidance on the NFIP regulations concerning watertight construction and the required certification for floodproofed non-residential buildings in Zones A, AE, A1-A30, AR, AO, and AH whose lowest floors are below the Base Flood Elevation.

4-93 Elevator Installation. Provides guidance on the NFIP regulations concerning the installation of elevators below the Base Flood Elevation in Special Flood Hazard Areas (both A and V zones).

5-93 Free-of-Obstruction Requirements. Provides guidance on the NFIP regulations concerning obstructions to flood waters below elevated buildings and on building sites in Coastal High Hazard Areas (Zones V, VE, and V1-V30).

6-93 Below-Grade Parking Requirements. Provides guidance on the NFIP regulations concerning the design of below-grade parking garages beneath buildings located in Zones A, AE, A1-A30, AR, AO, and AH.

7-93 Wet Floodproofing Requirements. Provides guidance on the NFIP regulations concerning wet floodproofing of certain types of structures located in Zones A, AE, A1-A30, AR, AO, and AH.

9-99 Design and Construction Guidance for Breakaway Walls Below Elevated Coastal Buildings.

Provides guidance on the NFIP regulations concerning the design and construction of breakaway walls beneath elevated buildings in Coastal High Hazard Areas (Zones V, VE, and VI-V30).

10-01 Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding. This technical bulletin discusses building techniques, including the use of fill, that can be used to ensure structures are reasonably safe from flooding.

11-01 Crawlspace Construction for Buildings Located in Special Flood Hazard Areas Provides interim guidance on minimum NFIP requirements as well as best practices for crawlspace construction in the Special Flood Hazard Area.